

REMARKS/ARGUMENTS

I. Introduction:

Claims 1, 6, 11, 22, and 30 are amended, claims 16-19, 29, and 31 are canceled, and new claims 32-35 are added herein. With entry of this amendment, claims 1, 4-6, 9-11, 14-15, 22, 26-28, 30, and 32-35 will be pending.

II. Claim Rejections Under 35 U.S.C. 103:

Claims 1, 4-6, 9-11, 14-15, 22, 26-28, and 30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5, 550,816 (Hardwick et al.) in view of U.S. Patent No. 6,587,938 (Eilert et al.). Claims 16-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Eilert et al. in view of Hardwick et al. and further in view of U.S. Patent No. 6,430,592 (Davison). Claims 18, 19, and 31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hardwick in view of Eilert et al. and further in view of Davison. Claim 29 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hardwick et al. in view Eilert et al. and further in view of U.S. Patent No. 6,763,192 (Jagannathan).

Claims 1 has been amended to specify that managing resources comprises: managing processor time utilizing time slicing at the virtual network element; managing memory, wherein the virtual network element manager receives memory allocation requests from the plurality of virtual network elements; and managing ports, wherein the virtual network element manager receives queries from the virtual network elements for available ports. Claims 6 and 11 have also been amended to include similar limitations.

The Hardwick et al. patent is directed to a method and apparatus for virtual switching. A management apparatus is coupled to each virtual switch to maintain information on an association between the plurality of data interfaces and the virtual switches. A processor is coupled to each virtual switch to insert a packet into an outgoing data stream on a data port to deliver the packet. The management apparatus limits each processor to only inserting a packet on another data port associated with the same virtual switch which received the particular packet. As noted by the Examiner, Hardwick et al. do not teach managing processor time.

Eilert et al. disclose a method for managing central processing unit resources of a computer. Processor weights associated with partitions of a computing environment are adjusted to allocate the resources.

Since Hardwick et al. are concerned with maintaining the separation between closed user groups for security reasons, the packets from different closed user groups are individually processed. Thus, modification of Hardwick to manage and share processor time between virtual switches would defeat an object of the invention; providing closed user groups on shared medium data paths while maintaining appropriate access policies and security measures (see, e.g., col. 6, lines 38-59).

Neither Hardwick et al. nor Eilert et al. show or suggest managing processor time utilizing time slicing or receiving queries from a virtual network element for available ports.

With respect to time slicing, the Examiner cites Davison, which discloses a system for sharing CPU time amongst multiple users. As noted above, Hardwick teaches away from sharing CPU time among different user groups. Furthermore, Davison teaches allocating processor time to multiple programs or users, rather than using time slicing to manage processor time between different network elements at an element manager. Since time slicing of the virtual network elements is performed by the virtual network element manager of applicant's invention, the manager can

ensure that the network elements do not exceed their allocated portion of processor time.

The Examiner further cites Jagannathan with regard to port management. Jagannathan describes a network manager that sends a request to a management mechanism for allocation of an output port with respect to a given input port in an optical packet switching matrix. The resource management mechanism then queries a port database to determine if a requested port is available. This process is used to reserve an output port and create an optical path between the input and output ports. In contrast, applicant's invention, as set forth in the claims, includes a network element manager that receives queries from the virtual network elements to determine which ports are available for a specific virtual network element. By having the virtual network element query the virtual network element manager for available ports, the virtual element manager can ensure that the virtual network elements use only those ports to which they are allocated.

Accordingly, claims 1, 6, and 11 as amended, are submitted as patentable over the cited references.

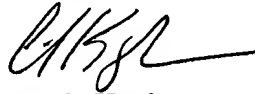
Claims 4-5, 30, and 32-35, depending from claim 1, claims 9-10, depending from claim 6, and claims 14-15, depending from claim 11, are also submitted as patentable for at least the reasons discussed above with respect to claims 1, 6, and 11.

Claim 22 has been amended to include providing an indication of percentage of memory and processor time that is allocated or available to the virtual network elements and, as amended, is submitted as patentable over Hardwick et al., Eilert et al., and the other references cited.

III. Conclusion:

For the foregoing reasons, Applicant believes that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,



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